CLAIMS

1. A method for use in a network that includes first and second network nodes interconnected by multiple links, each of said links having multiple channels, said method reserving channels of particular ones of said links for requested connections between said first and second nodes, ones of said channels in ones of said links having been previously reserved for other connections between said nodes using a first link selection algorithm, the method comprising responding to requests for connections between said first and second nodes by utilizing a second link selection algorithm different from said first link selection algorithm to select a particular link for each requested connection.

2. The invention of claim 1 wherein said first algorithm is of a type that causes less bandwidth fragmentation than said second algorithm, said second algorithm is of a type that causes less glare than said first algorithm, and said second algorithm is such as to preferentially select as said particular link a link that said first algorithm had previously selected for said other connections.

3. The invention of claim 2 wherein

said nodes operate in a communication network in which initially provisioned connections are made between pairs of endpoints,

restoration connections are made between at least particular pairs of said endpoints upon failure of the initially provisioned connections between those endpoints,

said first algorithm is used to initially provision said other connections,

and said requested connections are ones of said restoration connections.

4. The invention of claim 3 wherein one of two versions of said second algorithm is used when said first node receives a connection request and wherein the other of said two versions of said second algorithm is used when said second node receives a connection request.

5. The invention of claim 4 wherein said glare is a situation in which said first node and second node substantially concurrently attempt to reserve at least a particular one of said channels for respective different connections.

6. The invention of claim 1 wherein said first algorithm is a best-fit algorithm and said second algorithm is an interleave algorithm.

7. The invention of claim 6 wherein

there are K of said links having indices 1, 2,...,K, and

said best-fit algorithm is such as to select as a link for a requested connection the lowest-indexed link from among those of said links that have the smallest amount of unassigned bandwidth that can still accommodate the connection request.

8. The invention of claim 7 wherein said interleave algorithm is such that each of said nodes preferentially selects said particular link from mutually exclusive sets of said links.

9. The invention of claim 7 wherein

said interleave algorithm is such that said first node responds to a connection request by selecting, as said particular link,

a) a link from among the links having the indices {1,3,5,..,M} that has the smallest amount of unassigned bandwidth that can still accommodate the connection request, or, if there is no such link,

b) the first link having an index in the sequence {N ,...6,4,2} that has enough unassigned bandwidth to accommodate the connection request,

said interleave algorithm is such that said second node responds to a connection request by selecting, as said particular link,

a) a link from among the links having the indices {2,4,6,..,N} that has the smallest amount of unassigned bandwidth that can still accommodate the connection request, or, if there is no such link,

b) the first link having an index in the sequence {M ,...5,3,1} that has enough unassigned bandwidth to accommodate the connection request,

M is the largest odd number $\leq$ K, and

N is the largest even number $\leq K$.

10. The invention of claim 6 wherein each of said nodes is a cross-connect.

11. A communication network node for use in a communication network in which initially provisioned connections are made between pairs of endpoints, and wherein restoration connections are made between at least particular pairs of said endpoints upon failure of the initially provisioned connections between those endpoints,

said network node being adapted to be connected to a second communications network node by multiple links, each of said links having multiple channels,

said network node being further adapted to reserve at least one channel of a particular one of said links for a requested connection between said network node and said second network node using a selected one of two different link selection algorithms,

a first one of said algorithms being used when the requested connection is an initially provisioned connection and a second one of said algorithms being used when the requested connection is a restoration connection.

12. The invention of claim 11 wherein said first algorithm is of a type that causes less bandwidth fragmentation than said second algorithm, said second algorithm is of a type that causes less glare than said first algorithm, and said second algorithm is such as to preferentially select, as said particular one of said links, a link that said first algorithm had previously selected for said other connections

13. The invention of claim 12 wherein said network node is adapted to utilize a selected one of two versions of said second algorithm as a function of information received by said network node.

14. The invention of claim 13 wherein said glare is a situation in which said network node and second node substantially concurrently attempt to reserve at least a particular one of said channels for respective different connections.

15. The invention of claim 11 wherein said first algorithm is a best-fit algorithm and said second algorithm is an interleave algorithm.

16. The invention of claim 15 wherein

there are K of said links having indices 1, 2,...,K, and

said best-fit algorithm is such as to select as a link for a requested connection the lowest-indexed link from among those of said links that have the smallest amount of unassigned bandwidth that can still accommodate the connection request.

17. The invention of claim 16 wherein said interleave algorithm is such that said network node selects said particular link from a predetermined one of two mutually exclusive sets of said links.

18. The invention of claim 16 wherein

wherein said interleave algorithm selects said particular one of said links utilizing a particular one of two versions of said interleave algorithm,

a first one of said versions selecting as said particular link,

a) a link from among the links having the indices {1,3,5,..,M} that has the smallest amount of unassigned bandwidth that can still accommodate the connection request, or, if there is no such link,

b) the first link having an index in the sequence {N ,...6,4,2} that has enough unassigned bandwidth to accommodate the connection request,

and a second one of said versions selecting as said particular link,

a) a link from among the links having the indices {2,4,6,..,N} that has the smallest amount of unassigned bandwidth that can still accommodate the connection request, or, if there is no such link,

b) the first link having an index in the sequence {M ,...5,3,1} that has enough unassigned bandwidth to accommodate the connection request,

wherein M is the largest odd number $\leq$ K, and

wherein N is the largest even number $\leq K$.

19. The invention of claim 18 wherein said network node is adapted to be programmed to use a particular one of said versions for selecting links for connections between itself and said second network node.

20. The invention of claim 19 wherein said network node is adapted to be programmed to use the other of said versions for selecting links for connections between itself and a third node.

21. The invention of claim 19 wherein said programming includes at least one of a) configuration by an operator and b) execution of a protocol wherein said network node receives information from said second network node that determines which of said versions said network node is to use.

22. The invention of claim 18 wherein said network node is a cross-connect.

23. A method for use in a communication network of a type comprising a plurality of cross-connects, individual pairs of said cross-connects being interconnected by multiple links, each of said links having multiple channels, the method comprising

provisioning an initial path through said network between endpoints served by said network by provisioning connections between pairs of said cross-connects along said initial path, each of said connections comprising particular channels of particular links interconnecting said pairs of cross-connects, said initial connections being established using a best-fit algorithm to select the links for the connections along said initial path, and

responsive to a failure of at least one of said paths, establishing a restoration path through said network between the failed path's endpoints by establishing restoration connections between pairs of said cross-connects along said restoration path, each of said restoration connections comprising particular channels of particular links interconnecting the pairs of cross-connects along said restoration path, said

restoration connections being established using an interleave algorithm to select the links for the connections along the restoration path.

24. The invention of claim 23 wherein

there are K of said links having indices 1, 2,...,K, and

said best-fit algorithm is such as to select as a link for a connection between a pair of said cross-connects the lowest-indexed link from among those of the links interconnecting that pair of cross-connects that have the smallest amount of unassigned bandwidth that can still accommodate the connection request.

25. The invention of claim 24 wherein said interleave algorithm is such that

a first cross-connect of said particular pair of cross-connects responds to each request to establish a restoration connection between itself and the second cross-connect of said particular pair of cross-connects by preferentially selecting a link for that restoration connection from a first set of the links interconnecting that particular pair of cross-connects, and

said second cross-connect responds to each request to establish a restoration connection between itself and said first cross-connect by preferentially selecting a link for that restoration connection from a second set of said links interconnecting that particular pair of cross-connects, said first and second sets of links being mutually exclusive.

26. The invention of claim 24

wherein said interleave algorithm is such that a first cross-connect of said particular pair of cross-connects responds to each request to establish a restoration connection between itself and the other cross-connect of said particular pair of cross-connects by selecting for that restoration connection

a) a link from among the links having the indices {1,3,5,..,M} that has the smallest amount of unassigned bandwidth that can still accommodate the connection request, or, if there is no such link,

b) the first link having an index in the sequence {N ,...6,4,2} that has enough unassigned bandwidth to accommodate the connection request,

wherein said interleave algorithm is such that a second cross-connect of said particular pair of cross-connects responds to each request to establish a restoration connection between itself and the other cross-connect of said particular pair of cross-connects by selecting for that restoration connection

a) a link from among the links having the indices {2,4,6,..,N} that has the smallest amount of unassigned bandwidth that can still accommodate the connection request, or, if there is no such link,

b) the first link having an index in the sequence {M ,...5,3,1} that has enough unassigned bandwidth to accommodate the connection request,

wherein M is the largest odd number $\leq$ K, and

wherein N is the largest even number $\leq$ K.